




**Energy 2003**  
**Water Resources Management Track**  
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**Water Management Inc.**  
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## WATER RESOURCE MANAGEMENT

Without safe adequate long  
 term water supply a facility  
 is worthless.



### Water in the 00's and beyond

- Rapidly Escalating Water Rates (5% - 10 % per year)
- Federal assistance to water and sewer utilities is reduced.
- Federal Clean Water laws are driving up the cost of treatment and distribution/collection. Will add \$1 billion annually to the cost of water.
- Growth areas, and older cities require investment in sewer treatment - new infrastructure drives prices up.
- 35 States are depleting ground water levels faster than being replenished.
- Florida, California, Texas and Western States are operating at capacity limits of water available.



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### **Market Assessment for Capturing Water Conservation Opportunities in the Federal Sector**

[www.pnl.gov/buildings/WaterConservOpps.pdf](http://www.pnl.gov/buildings/WaterConservOpps.pdf)




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### Summary of Market Assessment:

**“The life-cycle cost-effective water  
 conservation potential in the federal  
 sector, based on appropriate off-the-  
 shelf technologies is estimated to be**

**... \$196 million/year”**



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### Summary of Market Assessment:

**“All off-the-shelf water conservation  
 technology retrofits, are life-cycle  
 cost-effective – at a combined  
 water/sewer cost of**

**\$2/1,000 gallons or greater.”**

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AMERICAN WATER  
RESOURCES ASSOCIATION  
Guided by Engineers, Committed

## PUBLIC WORKS MODERNIZATION

Utility Systems (Water, Sewer, Storm Water)  
are being upgraded to current standards.  
**therefore**  
Utility rates will rise dramatically in small to  
mid-size cities.

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## Corporate Overview

- A. Based in Alexandria, VA
- B. Offices in Nashville, Denver, Virginia Beach & San Diego
- C. WMI created in 1980
- D. Acquired Water Management Services 2002
- E. Pioneered Water-based Performance Contracting (1982)
- F. Hundreds of Projects Completed in 20 + State
- G. Approximately 60 employees

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## What Is The Process?

- Water audits
- Consumption analysis
- Design
- Project management
- Financing options
- Implementation and construction
- Measurement and verification
- Training
- Savings guarantee

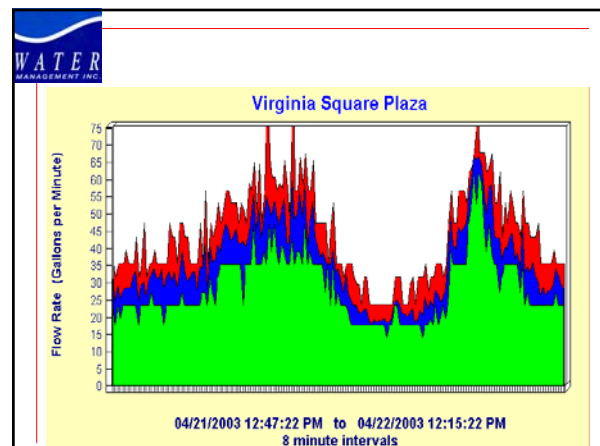
**WATER**  
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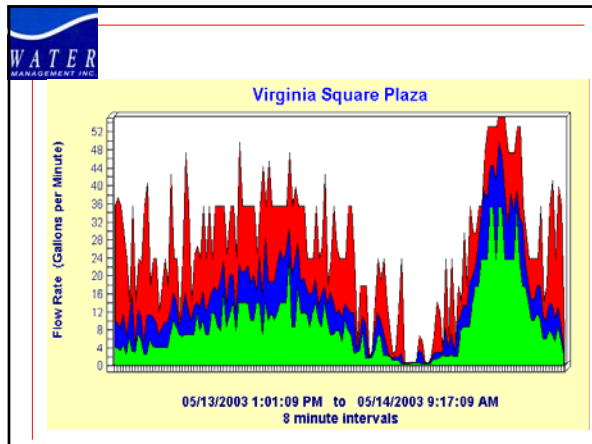
## WATER AUDIT FACTORS

WATER METER ASSESSMENT  
3 YRS WATER/SEWER CONSUMPTION  
OCCUPANCY & CENSUS  
FIXTURE TYPE  
CURRENT REPAIR PRACTICES  
INFRASTRUCTURE CONDITION  
MAINTENANCE COSTS & PRACTICES

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## Meter Master Flow Recorder



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## METERING

REQUIRED FOR LONG TERM  
MEASUREMENT AND VERIFICATION  
AND PROPER ALLOCATION OF COSTS

- MAIN METERS
- LOCALIZED BUILDING METERING
- POINT OF USE METERS

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## WHAT UPGRADES ARE COST EFFECTIVE?

- TOILETS
- FAUCET REPLACEMENT
- SHOWERHEADS
- FAUCET FLOW CONTROLS
- RECYCLING SYSTEMS
- COOLING TOWER SYSTEMS
- LAUNDRY SYSTEMS

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## STANDARDS

• Toilets	1.6 gallons / flush
• Urinals	1.0 gallon / flush
• Showerhead	2.5 gpm @ 80 psi
• Sink faucet	2.2 gpm @ 60 psi
• Lavatory (public)	0.5 gpm @ 80 psi
• Lavatory (metering)	0.25 gallons / cycle

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## Pressure Assist Toilets

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## Flow Controls

Flow Controls/Restrictors are not always aerators

## Shower Heads



## Faucets



## Pressure Regulators



## “Engineered Solutions” Reuse, Reclaim, Recycle

Use water wisely where possible



## Cooling Tower Measures

1. Non-chemical water treatment
2. Advanced Chemical Treatment
3. Sewer “deduct” meters
4. Float Valve adjustment/replacement

## Laundry Measures

1. Ozone laundry systems
2. Water recycling/reuse
3. Heat recovery
4. High efficiency commercial dryers
5. Horizontal axis washers (residential)

## **“Once Thru” Systems**

1. Medical vacuum pumps & air compressors
2. Refrigeration/air conditioning systems
3. Boiler/Steam/condensate
4. Efficient irrigation
5. Leak detection

## **MEASUREMENT & VERIFICATION**

- USE ACTUAL METER READINGS FROM UTILITIES
- M & V EACH MEASURE FOR COMPLIANCE
- AUTOMATED METER READING EQUIPMENT QUICKLY IDENTIFIES PROBLEM AREAS

## **EXCESS SAVINGS**

A WELL DESIGNED WATER EFFICIENCY PROGRAM WILL GENERATE EXCESS DOLLAR SAVINGS OVER TIME FOR EVEN THE BEST RUN FACILITIES

## **WHAT TO USE EXCESS FOR**

- Energy Upgrades
- Other Water Upgrades
- The Bottom Line
- Attend Energy 2004

## **Water is today, what Energy was in 1980**

- New technologies in water efficiency
  - Deliver a positive ROI
  - Have a positive impact on operations
  - Benefit the environment